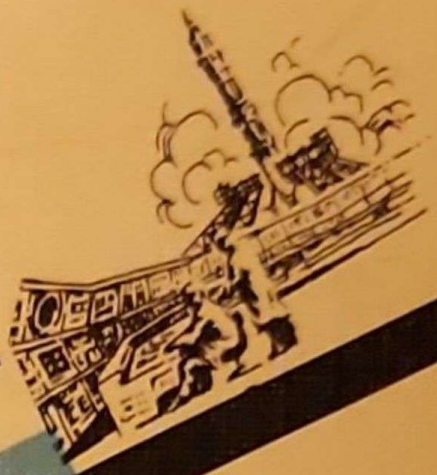
The Training of Personnel for Industry

Mai VOLKOV



The Soviet Experience

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The Training of Personnel for Industry

Mai VOLKOV

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Study, Study and Study

What do developing countries need most in order to achieve economic independence? They need highly-educated, skilled personnel who can manage the national economy efficiently and make use of the latest achievements in world science and technology for promoting national progress. Most developing countries do not have such specialists, and to train them is one of their primary tasks.

Over many decades colonizers have tried to cultivate among oppressed peoples an attitude of doubt about their own creative capabilities, spreading the myth of "the white man's superiority". Knowledge, literacy and the ability to operate modern machinery became the privilege of foreigners who were the masters in Asian and African colonies.

Every nation, no matter how far this nation may find itself from centres of world culture, has talented people. Every nation has the capability and the right to take part in the development of civilization and to use its fruits on equal terms with all other nations. The liberation from colonial oppression made it possible for a number of

Asian, African and Latin American countries to exercise this right.

As developing countries set about solving complex economic problems, they may find useful the experience gained by the Soviet state in the first years of its existence.

When the Revolution of October 1917 freed the peoples that inhabited the Russian Empire from the power of landowners and capitalists—and for the peoples of the national hinterlands this meant liberation from colonial oppression—the country's economic situation was extremely grave. The young Soviet Republic had to rehabilitate the national economy ravaged during the First World War (1914-1918) and the Civil War (1918-1920), to start socialist construction, build a new state and administrative apparatus and tackle many other serious problems. And they could not be successfully resolved unless the state had a sufficient number of specialists capable of managing complex national economy. Therefore, the Soviet state regarded the training of personnel on a broad scale as a task of first priority.

...By the Kremlin wall in Moscow's Red Square were buried some of the most outstanding leaders of the Soviet state who made an important contribution to the building of the new society. One of them was Ivan Likhachev, after whom the country's biggest auto works in Moscow is named. The life of this man is a striking example of how Soviet power made it possible for an ordinary worker to develop his talents to the utmost.

Ivan Likhachev was born into a poor peasant family. At the age of twelve he went to work at a plant. The October Revolution changed his life

entirely. He received a higher education and became director of an auto works and later minister of automobile transport and highway construction. He was considered a "professor" of automotive industry. American specialists travelled to Moscow to learn from him, and Henry Ford, the American automobile magnate, considered Ivan Likhachev a major Soviet industrialist. The life of Likhachev is typical of a whole generation of Soviet people who after the October Revolution became highly-skilled specialists, scientists, economic managers and state leaders.

The Cultural Revolution

From Backwardness to Progress

The level of literacy was very low in pre-revolutionary Russia. Eighty per cent of children and adolescents had no opportunity to receive an education. About 72 per cent of the population between 9 to 49 years of age could neither read nor write. The situation was still worse in the Eastern regions of the Russian Empire: 98 per cent of Tajiks, 97 per cent of Kirghizes and 96 per cent of Uzbeks were illiterate. Forty nationalities in Russia did not even have an alphabet of their own. In 1913 Vladimir Lenin wrote: "There is no other country so barbarous and in which the masses of the people are *robbed* to such an extent of education, light and knowledge—no other country has remained in Europe; Russia is the exception." [1]

It was only the exploiter classes and privileged sections of the population that had access to cultural values. Oppressed by poverty and exhausting work, the majority of workers and peasants had no opportunity to study and to enjoy the benefits of culture, science and art. It was impossible for them to learn trades that required literacy. Only

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[1] V. Lenin, *Coll. Works*, Vol. 19, p. 139.

a handful of those born into peasants' and workers' families succeeded in getting an education and became engineers, technicians, teachers, or doctors. Landlords, factory and plant owners as well as the intelligentsia that served their interests deliberately kept working people in ignorance. Instead of setting up a national system of personnel training, the ruling circles in tzarist Russia preferred to hire foreign specialists, who had no wish to pass on their knowledge and technical skill to Russian factory and office workers under their supervision.

At the same time, against the background of mass illiteracy, Russian culture—literature, poetry, the arts and science—continued to develop. Many progressive cultural figures and a part of the students of Russia's few universities and institutes were critical of a social system that condemned the people to ruthless exploitation and the country to backwardness. However, their efforts to change the situation failed to yield positive results. The benefits of culture remained inaccessible for the majority of the people. Before the October Revolution the works of the great Russian writer Leo Tolstoi were unknown to the masses of people in Russia since the majority of its population were illiterate.

The October 1917 Revolution brought about radical changes. The socialist society was built in the Soviet Union not only thanks to industrialization and the revolutionary transformation of agriculture but also thanks to the cultural revolution which led to an intellectual rebirth of the peoples of Russia.

The cultural revolution made it possible for the country to train highly-skilled personnel for all

A poster of the twenties. The caption reads: "The illiterate is just like the blind, misery and misfortunes await him everywhere"

In pre-revolutionary Russia 72 per cent of the population were illiterate. To eliminate illiteracy among the adult population the Soviet government set up schools and study groups throughout the country. By the late thirties illiteracy was eradicated

branches of the national economy, science, education, culture and state administration. It began with the nationalization of the country's cultural riches.

For many centuries emperors and members of the nobility collected artistic treasures which were seen only by privileged few. The majority of the Russia's population had no idea of the remarkable works of art by great painters, sculptors and jewellers of different countries and different periods that were kept in the palaces of Russian emperors and nobility. Not only did the Soviet government nationalize the largest art collections, but it made them accessible to all.

Accompanied by guides thousands upon thousands of illiterate people visited former palaces which had been turned into public museums. Theatres, formerly attended by a select few, were opened to working people. A new world appeared before them, awakening in them intellectual curiosity, an irresistible thirst for knowledge, study and independent creative work, broadening their outlook and enhancing their cultural awareness. It was a first step towards knowledge and education.

The young Soviet state had to overcome tremendous economic difficulties while at the same time waging a struggle against internal and external counter-revolutionary forces. But, nevertheless, it devoted much attention to educational work among working people. It evolved previously unknown forms and methods of introducing workers and peasants to cultural achievements and drawing them into public life. Workers' clubs, village and mobile libraries, and study rooms were

opened everywhere. Educational propaganda trains and ships visited all parts of the country. Literate workers and peasants were encouraged to write for newspapers and magazines.

The masses of people began to realize that the extent to which they could participate in public life and in the revolutionary transformation of society depended on their own cultural level, the acquired knowledge, know-how and modern trades.

The farsighted policy pursued by the Party in the cultural field soon yielded good results. Russia was rapidly growing into a technically, socially and economically advanced state.

Facts and Figures

In 1982 there were 851 people with a higher or complete (10-year) or incomplete (8-year) secondary education per 1,000 of population in the USSR. In 1981 there were over 1,400,000 scientific workers in the country, or one-fourth of the world's total. And in the same year 5,100,000 people made innovation proposals and applied for patents of inventions; this indicates that the level of professional training in the country has made it possible not only to use the latest techniques but also to improve them and to develop new ones. At present an average of 3,700 new types of machines, facilities, apparatus and instruments are developed in the USSR every year.

The cultural revolution has radically changed rural life, too. Illiteracy has long been done away with in the countryside. Today 1,638,000 special-

ists with a higher or specialized secondary education are employed in the agricultural sector. In addition to that, there are 4,500,000 trained machine operators working on state and collective farms—tractor, combine-harvester and truck drivers, mechanics, and so on.

The Soviet Union has a broad network of educational establishments of all levels and types, which fully meets the country's requirements for trained personnel. In late 1981—early 1982, of the country's total population of 268,800,000 over 100 million Soviet people were studying—44,300,000 in general education schools, including 5,000,000 in evening schools without giving up their jobs, 4,100,000 in vocational schools, and 9,900,000 in higher schools and specialized secondary education establishments. The rest were learning new trades or improving their skills at enterprises and establishments in accordance with special programmes.

In 1981 there were 38 doctors per 10,000 of the population in the USSR as compared with seven in 1940. Qualified cadres began to play a major part in the development of all the branches of the national economy, thus promoting the country's scientific and technological progress. It is no coincidence that it was the Soviet Union that designed and launched into space the world's first artificial Earth satellite and that the world's first cosmonaut Yuri Gagarin was a Soviet citizen.

Yuri Gagarin's schooling was interrupted for two years during the Great Patriotic War (1941-1945) when the part of the country where he lived was temporarily occupied by the Nazis. After the war, Yuri quickly caught up with his studies. At 15,

The world's first cosmonaut Yuri Gagarin studied at a trade school (top), then graduated from an aviation school and later the Zhukovsky Air Force Academy

he entered a vocational school in order to qualify as a skilled foundry worker while at the same time studying at an evening secondary school to complete his general education. Then Yuri enrolled in a specialized secondary school where he was also a member of after-school scientific groups. Gagarin's graduation thesis was entitled "Design of a foundry for serial production of 9,000 tons of castings annually", which showed the author to be a highly-qualified specialist in this field. While a student at the specialized secondary school, Yuri began to be interested in aviation; later he joined an aviation club and became a pilot.

Yuri Gagarin, the world's first cosmonaut, traversed a path typical of Soviet youth, a path of studies linked with production work.

The foundations of the modern Soviet system of training skilled personnel were laid in the first years of Soviet government—in the twenties and early thirties.

Everything Depends on Skilled Personnel

Vladimir Lenin, founder of the Communist Party of the Soviet Union and head of the first Soviet government, attached tremendous importance to the training of specialists for the national economy, without whom the country would not be able to overcome its backwardness inherited from the past and embark on the path of social and economic progress.

"Without the guidance of experts in the various fields of knowledge, technology and experience,"

wrote Vladimir Lenin in 1918, "the transition to socialism will be impossible, because socialism calls for a conscious mass advance to greater productivity of labour compared with capitalism, and on the basis achieved by capitalism." [1] And further: "The task that the Soviet government must set the people in all its scope is—learn to work." [2]

To the country's youth Lenin issued the call—"To study!" His speech at the Third All-Russia Congress of the Young Communist League held in the autumn of 1920 has become for Soviet young people a guide in life and in work. Lenin devoted his speech entirely to the question of what and how one should study.

In order to build a new society it was necessary to know what had been achieved by mankind. Lenin pointed out that the economy must be restored on modern lines, on the basis of electrification, and that it was not until after the whole country and all the industries and agriculture were electrified that the new society could be built. "Confronting you," Lenin said at the congress, "is the task of economically reviving the whole country, of reorganizing and restoring both agriculture and industry on modern technical lines, based on modern science and technology, on electricity. You realize perfectly well that illiterate people cannot tackle electrification, and that elementary literacy is not enough either. It is insufficient to understand what electricity is; what is needed is the knowledge of how to apply it technically in industry and agriculture, and in the in-

[1] V. Lenin, *Coll. Works*, Vol. 27, p. 248.
[2] *Ibid.*, p. 259.

dividual branches of industry and agriculture. This has to be learnt for oneself, and it must be taught to the entire rising generation of working people."[1]

Thus, Lenin put forward as a primary task that of training *specialists* who could apply up-to-date scientific and technological achievements in solving practical problems confronting individual sectors of the national economy. He also explained to his young audience that such specialists must have a good *general training* and be literate in the full sense of the word. Hence the importance of providing an all-round general education to future specialists. In accordance with this Leninist principle, the training of specialists in Russia was inseparably linked with the establishment of a new system of education and with the reorganization of educational institutions inherited from the pre-revolutionary past.

The old educational system could not meet the growing needs of the day. It gave privileges to the rich and the influential, was undemocratic and removed from real life and from the practical problems facing society. It burdened students with an immense amount of knowledge much of which one hardly needed in one's everyday life. Lenin believed that instead of this it was essential to equip every student with a knowledge of basic facts.

In addition to the two basic requirements of a specialist of the new type Lenin also considered it necessary that he should be a bearer of new moral principles. The old educational system trained obedient servants of capitalists. The new technical intelligentsia was to serve the people. Know-

[1] V. Lenin, *Coll. Works*, Vol. 31, p. 280.

ledge, science and technology can serve both good and evil. Before the Revolution, machinery was an instrument of capitalist exploitation and engineers and technicians charged with operating this machinery helped capitalists exploit the people. Specialists of a new type, on the other hand, were to participate in the struggle for liberation from exploitation, for building a society in which no one would profit at the expense of others.

The psychology of the specialists in the old society was extremely individualistic. Lenin described it as follows: "If I work this plot of land, I do not care a rap for anybody else; if others starve, all the better, I shall get more for my grain. If I have a job as a doctor, engineer, teacher, or clerk, I do not care a rap for anybody else. If I toady to and please the powers that be, I may be able to keep my job, and even get on in life and become a bourgeois." [1] This psychology is incompatible with a specialist of the new, socialist society. The new specialist should feel his responsibility not only for the work he is assigned to do but also for everything around him, for the future of his country and his people, for the country's economic and social progress. He is to make sure that science and technology are used for the benefit of all, for the triumph of what is good and just.

It is not so easy to foster a new psychology, especially when the old society's prejudices, traditions and views are still alive and when the society based on exploitation, social injustice and moral principles which endorse them continues to

[1] V. Lenin, *Coll. Works*, Vol. 31, p. 294.

exist in neighbouring countries. Therefore, new moral principles and standards are fostered along with training in specific skills, and they become an inalienable component of the future specialist's psychological make-up. Moral principles are inseparable from professional qualities. A doctor will hardly become a skilled specialist in his field if he tries to enrich himself while practicing his profession, to find an easy, well-paid job instead of devoting his strength and knowledge to caring for the sick.

Specialists build not only new factories and plants but also a new society. Only those who cannot reconcile themselves to social injustice, inequality, egoism and indifference to the life of others can build a new society, a society free from exploitation. A specialist cannot be indifferent to politics. His political orientation determines the goals for the sake of which he uses his professional knowledge, his skills and the scientific and technical means at his disposal and the more powerful these means, the more important for society is the political orientation of specialists who handle them.

Therefore, Lenin pointed out, the training of skilled personnel must also include their education as citizens of the new society with high moral and civic qualities, who would consider it their supreme duty to serve their people, the Motherland, and to contribute to social progress.

These Leninist ideas formed the basis of personnel training from the first years of Soviet government. They remain the guiding principles today in the education of Soviet young people and

in the system of training specialists for the country's economy.

It is impossible to build a new culture without drawing on the heritage of the past. Its foundations are laid by the culture created by previous generations. Nor is it possible to acquire high qualifications without the help of teachers, tutors and older and more experienced specialists. In the early years of Soviet government such specialists came mainly from the bourgeois and landowning classes, who had until the Revolution exploited working people, made big profits and enjoyed various privileges. Nonetheless, it was necessary to involve members of the old intelligentsia in the building of the new society and in the training of personnel.

Together with the People

The best Russian intellectuals had always linked their destiny with that of the people and had taken an active part in revolutionary struggle.

Previously indifferent to politics, many leading Russian scientists and specialists unreservedly welcomed the October Revolution, regarding it not only as the beginning of the country's social and political regeneration but also as an indispensable condition for the development of science and technology. Immediately after the revolution they got down to tackling problems of primary importance for the country's economic development.

However, the majority of Russian professionals took a hostile attitude toward the revolution. Some

of them at first did not perceive the meaning of the political events in the country and kept aloof from what was taking place around them while others began to fight against the revolution and carry out subversive activities against the revolutionary government. Most of the foreign experts working in Russia, whose number was quite large, as well as some Russian specialists emigrated.

Lenin believed it necessary to put an end to the sabotage by Russian and foreign specialists and to involve them in constructive work in the interests of the people. He said that they should be paid more for their work despite the ongoing struggle against social inequality, that the "stars of the first magnitude" [1]—first-rate bourgeois scientists and specialists—were to be treated in a bourgeois manner. Lenin described their higher salaries as "a tribute for our own backwardness".[2] In order to stop paying the "tribute", new personnel had to be trained who could replace the bourgeois intelligentsia.

Of course it was not only high salaries that induced Russian and foreign experts to work for the new government. Education, persuasion, moral influence and the examples of revolutionary-minded Russian intellectuals also played a significant role here. A real "war for brains" was under way in which the main force—the righteousness of the cause of social progress and justice—was on the side of the people. But the old-time specialists needed to be convinced of it, and this required of the new government and of revolutionaries from

[1] V. Lenin, *Coll. Works*, Vol. 27, p. 250.
[2] *Ibid.*

worker or peasant stock a great deal of patience, self-control and the ability to overcome their own hostility to those who represented the old world and served the exploiters before the Revolution.

It did not take long to put an end to the acts of sabotage carried out by specialists, who rejected the Soviet government. But the important thing was to win them over to the Bolsheviks' side completely and make them active and true builders of the new society. Eventually, this problem was successfully resolved. Old-time specialists gradually divided into two camps. The majority, who were fair and patriotic-minded, having realized that the new system was just, progressive and historically necessary for the future of Russia, began to work with enthusiasm, such as they had never shown before the Revolution, giving all their knowledge, experience and abilities to the people. A smaller part of bourgeois professionals could not or did not want to change their views. They joined the counter-revolutionary forces and after the latter's defeat either emigrated to the West or continued to fight Soviet power clandestinely, committing acts of petty sabotage.

On the whole, the new government won the "war for brains". Many of the old-time intelligentsia became teachers and helped train new personnel for the building of new society.

One of the craters on the reverse side of the Moon is named after Friedrich Tsander, a Russian engineer of the old school and founder of the first scientific institution for studying jet propulsion and building rockets. His students were among those who designed the first spaceships that carried man into outer space.

"Tsander is brilliant," wrote the outstanding Russian scientist Konstantin Tsiolkovsky, founder of space science. Tsiolkovsky was 60 when the October Revolution took place, but it was after the Revolution that his most creative period began.

Nikolai Zhukovsky, founder of the airfoil theory on which world aircraft manufacture is based, was 70 at the time of the Revolution. He and his young student Andrei Tupolev became organizers of Soviet aircraft industry. Airplanes designed by Tupolev are among the world's best.

For these and many other specialists who belonged to the best part of the pre-revolutionary Russian intelligentsia, participation in the socialist transformation of society was as natural as improvement of their professional skills. By personal example they helped hesitant old-time experts to take the right road—serving their country.

A New School System

Public Education Reform

To become a good specialist with a capacity for professional growth, one should acquire a certain amount of basic knowledge in a general education school.

Immediately after the October Revolution, class privileges in the field of education were abolished. Before the revolution there were many types of schools in the country, such as parish schools, secondary schools, technical schools, and so on. They enjoyed different social status and had different curricula. The Soviet state set up a uniform labour school, where boys and girls were taught in accordance with a single curriculum and were prepared for practical work. Compulsory primary education was introduced. All education was free. The new school system ensured complete equality of students irrespective of nationality.

After the school reform the number of schools and students began to grow rapidly, and as a result, there was a shortage of teachers. Pedagogical institutes were opened everywhere, and short-term teachers' training courses were set up in various parts of the country to meet pressing demands. These courses were for those who were literate but lacked pedagogical training.

By the end of 1920 there were 55 pedagogical institutes in the country, or 2.5 times more than before the Revolution. In 1920 they graduated about 5,000, largely helping to meet the country's demands for teachers.

Particularly striking changes were under way in the country's Eastern regions. Before the revolution there were only 50 secular schools with 2,000 students and several madrasahs for children of landowners and mullahs on the vast territory of Turkestan, where the Uzbek, Turkmen, Kirghiz and Tajik Union Republics are now situated. In 1920 there were already 2,022 schools in Turkestan attended by 165,000 children.

An important part of the public education reform was to work out new school curricula that would bring education closer to the demands of the day. Whatever was valuable in the old school system was preserved. Leading educators and scientists prepared new textbooks on all subjects taking into account the latest achievements of science and technology. The new curricula also provided for the ideological education of the future builders of socialist society.

The Soviet state began to set up a broad network of preschool centres. The Declaration on Preschool Education adopted on November 20, 1917, said that preschool establishments were to be part of the general system of public education, along with general education schools.

Thus, a new principle was introduced in the Soviet school system, the principle of continuity whereby a pupil receives a sound general education and is brought up properly from early childhood. Already in a kindergarten a child learns to

live in a collective, to carry out public duties, to be disciplined, well-organized, industrious, responsible, and to be able to get on well with others.

As soon as the country had healed the wounds inflicted by the Civil War and the war of foreign intervention, it considerably increased allocations for education. In the twenties the two main trends in this field were: a broadening and strengthening of the school network in the countryside, and emphasis on vocational training of senior schoolchildren. School graduates should not only be well-educated but should also have special training that would enable them to work in co-operative trade organizations, at industrial enterprises and economic, cultural and educational establishments. Although this system of education had certain shortcomings and later changes were made, in those days it helped to meet the country's needs in middle-level specialists.

Along with labour schools, factory apprenticeship schools were set up for training a new generation of skilled workers. The first schools of this type were not merely institutions of vocational training, for along with such training they provided a seven-year general education. By the late twenties, as the level of general education rose steadily, they became strictly vocational schools and the term of instruction was reduced to one and a half to two years.

The factory apprenticeship schools proved extremely effective and their experience has been drawn upon in setting up new technical and general education schools. Vocational schools, which train highly-qualified practical workers for various sec-

tors of the national economy, are very popular with Soviet youth today.

Down With Illiteracy

The rebuilding of the system of public education played a significant role in the training of skilled personnel which the young Soviet republic needed for achieving rapid economic growth. However, still greater efforts were required. First, the training of specialists under the system of public education was a relatively long process, and the country could not wait. Second, the majority of the population remained outside the system of public education, those who had had no education whatever before the Revolution and who had long passed school age. But many of them, while illiterate, were experienced workers and could easily, with proper training, become skilled workers.

And there was a social aspect to the matter which was also significant. To provide an education to illiterate adults was not only to help meet the country's needs in specialists but also to do away with an historical injustice—the fact that people were deprived of an opportunity to enjoy the benefits of culture and to be full-fledged members of society.

Unless illiteracy was eliminated it was impossible to ensure participation of the broad masses of the people in the country's political life and in state administration, which is one of the most important features of the Soviet system. Lenin

pointed out that illiteracy was a serious obstacle in the building of a new, socialist society.

Soon after the October Revolution a special decree was issued obliging all illiterates from 8 to 50 years of age to learn to read and write in their native language or in Russian, whichever they preferred. An All-Russia Special Commission for the Liquidation of Illiteracy was set up. By the end of 1920 about 200,000 people were conducting literacy classes. Those attending the classes enjoyed substantial privileges: they were given two hours off during their working day for studies, with no loss of pay.

Circles, groups and schools to eliminate illiteracy were organized throughout the country. Textbooks for adults, including primers, were published in mass editions. They were distributed either free of charge or sold at reduced prices. Linguists developed alphabets for the nationalities that had no written language of their own before the revolution.

The nationwide literacy campaign was a success. Within the first three years 7,000,000 people learned to read and write. Assessing the results of the campaign at the end of 1920, Lenin said: "It has done a good deal compared with the past, but it has done little compared with what has to be done." [1]

In 1923 a voluntary society called "Down With Illiteracy" was formed with Mikhail Kalinin, head of the highest body of Soviet power—the Con-

[1] V. Lenin, *Coll. Works*, Vol. 31, p. 518.

tral Executive Committee of the USSR—as chairman. Trade unions, Young Communist League organizations and Red Army units, besides state organizations, took part in this campaign. By 1925 there were almost no illiterates among industrial workers. But in the countryside the level of illiteracy remained high—60 per cent in the early 1929.

Illiteracy was first eradicated in cities and industrial centres. In 1931 there were no illiterate people in the Lower Volga region. In the Soviet Central Asian republics the results were particularly notable. Whereas in 1913 a mere two per cent of Uzbeks were literate, in 1932 the figure rose to 72 per cent, the respective figures for Turkmen were two per cent and over 60 per cent.

By the late thirties the country had succeeded in doing away with illiteracy completely. The good results of this campaign were in fact felt much earlier. As people learned to read, write and do arithmetic they also improved their cultural and technical level and began to work better and take part in public activities.

For workers and peasants knowledge had opened up a new life enabling them to master new trades. In those days they thought more about their studies than about their wages. When a group from the financial department visited several villages they noted with surprise: "Peasants talk more about how to teach their children than about their taxes."

The eradication of illiteracy within a period of twenty years is rightly regarded as one of the most important achievements of Soviet power.

Concern for Every Child

One of the most dramatic pages of the early history of Soviet power concerns the tragedy of millions of children who had lost their parents and became homeless in the years of the First World War, the Civil War and the war of foreign intervention, and as a result of the economic dislocation and famine that followed. These children did not study or work and had no means of subsistence. They roamed the country like beggars and joined bands of thieves and robbers.

The Soviet state was confronted with the task of saving those children. Special boarding schools were set up where the homeless waifs lived and studied. Teaching them was an unbelievably difficult task: the juveniles were of different age; they had lived as beggars for a long time and were rowdy and undisciplined.

One of the best-known of such schools was the corrective labour school named after F. Dzerzhinsky, one of the leaders of the Soviet state. The school was headed by the prominent educator A. Makarenko. The children in the school had a strict but reasonable schedule. In the morning they cleaned their rooms, then studied. After classes they worked for four hours at a school plant, where they made the country's first photo cameras, each consisting of 300 precision parts. In the evening they read books, played games, joined hobby groups and took part in amateur performances and debates.

When visitors came to the Dzerzhinsky school

for the first time they usually expected to meet, if not thieves and hardened hooligans, children different from those brought up at home. To their surprise they would meet neatly dressed and alert boys and girls who gladly showed their guests their clean living quarters, their garden with sweet-smelling flowers and the spacious shops of their plant. Visitors could not help being impressed by the way the children lived: they were like one big friendly family where all money earned was fairly distributed and nobody sought advantages for himself only. Festive occasions were celebrated; the best students were sent to study at universities and institutes, and younger children were well cared for.

Among those who went through the school of corrective labour some became first-rate specialists in various sectors of the national economy, prominent workers in the field of culture and the arts, military leaders and scientists. They lived and worked in accordance with their school's traditions of collectivism, a responsible attitude towards the common cause, and teamwork. They possessed an ability to work with people who were difficult to deal with and prone to undisciplined behaviour. This is extremely important. For a good specialist needs to have not only knowledge and professional skills but also civic awareness and the ability to inspire others in work.

In corrective labour schools former homeless waifs received an education which later enabled them to work as middle-level specialists or to continue their studies at institutions of higher education.

Workers' Faculties

Universities and institutes were mostly responsible for the training of skilled personnel.

In pre-revolutionary Russia higher education establishments were centres of advanced science and social thought. They were world-famous and had many outstanding scientists and researchers on their staff. However, they were few in number and could not meet the country's demands for specialists in various fields. And the main thing was that working youth and those born into workers' and peasants' families, with rare exceptions, had no opportunity to enter universities, which were even less accessible to the working classes than secondary schools.

The October Revolution put an end to the exploiter classes' monopoly over university education. Institutions of higher learning were assigned the task of training specialists for the socialist society.

The rebuilding of the system of higher education was bitterly opposed by the majority of the teaching staff who were backed by many students. They called for autonomy of the universities, for their independence from the government. In actual fact, however, the slogan of "autonomy" was used in an attempt to sabotage the policies of the Soviet government, which opened the doors of higher education establishments to working youth.

The Soviet state pursued a flexible policy with regard to the teaching staff. Along with explanatory and educational work, material incentives were offered. Good material conditions were provided for

experienced professors, and every effort was made to enable them to engage in creative scientific work. At the same time, the Soviet government waged a resolute struggle against the open enemies of people's power and succeeded in winning over to its side more and more university and college teachers of the old school. Scientists who had been denied the opportunity to engage in teaching by the tsarist government for their revolutionary views as well as technical and engineering specialists were invited to teach at universities and institutes, and they played an important role in the first stage of the building of a new system of higher education.

New regulations for admission to universities and institutes were established with a view to changing the social composition of the student body. Since education was now free, it became possible for young people of worker and peasant origin to enter higher education establishments. Students were paid allowances and were provided with free hostel accommodation and with meals at reduced prices. In addition, they could make free use of textbooks and of all that was needed for their studies.

But these measures were not enough to put worker-peasant youth in equal conditions with children from well-to-do families and families of the former exploiter classes. For the worker-peasant youth lacked sufficient schooling. To remedy the situation, so-called workers' faculties *(Rabfaks)* were set up in September, 1919, at institutions of higher education. Those were preparatory departments which conducted intensive study programmes giving the knowledge required for entry

into a university or institute. About 17,000 young workers, peasants and demobilized soldiers were enrolled at the first 32 workers' faculties that were opened. Those who finished the workers' faculties were admitted to institutions of higher education without having to take entrance examinations.

Special textbooks were written for workers' faculties and the best, most dedicated and progressive-minded teachers were invited to work there.

Many leading scientists were enthusiastic about the new project. At the ceremony opening the country's first workers' faculty a letter from the famous Russian biologist K. A. Timiryazev was read. It said: "Young comrades! This message of cordial greetings is from a man who is more than 75 years old... Age and illness prevent me from being present at the meeting but you must not regard my absence as indifference on my part to the opening of the first workers' faculty, something I had been dreaming of for a long time. For years I have wanted to see science and democracy more closely linked, to see an alliance between knowledge and labour. The workers will become a truly creative force when they have access to the great achievements of science, and science will begin to develop on a firm, reliable basis when its future is in the hands of the people."

For those who wished to obtain a higher education but lacked the necessary theoretical background, workers' faculties was the answer. From the early thirties workers' faculties were set up directly at big factories and plants, thus enabling more younger workers to enter institutions of higher education.

The results achieved by the workers' faculties

Many prominent public figures, scientists and writers attended workers' faculties before receiving a higher education. Among them are: Academician N. Zhavoronkov, chemist, Academician N. Tsitsin, botanist and plant breeder, Academician A. Samarin, metallurgist (top); Mussa Dzhalil, Tatar poet (middle), Alexander Fadeyev, writer (bottom)

proved so valuable that a special resolution was adopted by the Soviet government in 1969 stipulating that preparatory departments be set up at higher education establishments for working youth who wish to continue their studies after working for several years or serving in the army. By analogy with the workers' faculties of the twenties and the thirties the preparatory departments came to be called *Rabfaks*.

Sending Young People to Study Abroad

In the first Soviet years the country was very much isolated because of the economic blockade imposed by imperialist states. After the lifting of the blockade the Soviet Union began to establish and develop economic and cultural contacts with other countries. It became possible to send young people to study at universities and colleges abroad, particularly in fields where the Soviet Union's shortage of specialists was most acute.

All expenses for studies abroad were paid by the state. This made it possible to send abroad young people of worker stock who were the most patriotically-minded and loyal to Soviet power. That was one of the reasons why they all returned home after completing their studies abroad and why there was no "brain drain", from which developing countries in Asia, Africa and Latin America suffer so much today.

Sending young people to study abroad was an expensive way of training skilled personnel. As the Soviet educational system expanded and improved,

it became possible to train skilled personnel of all levels and in all specialties at home and there was less and less need to send young people to study at universities and colleges abroad. However, the Soviet Union studied other countries' experience in the field of education and adopted what was valuable and suitable for the training of its own specialists. Up-to-date scientific publications and textbooks were translated into Russian, published in huge editions and sold at low prices so that all those who were interested including students would be well informed about the latest developments in science and technology.

Moreover, foreign specialists came to work in the Soviet Union on a contract basis. They took part in building industrial enterprises and helped those who worked with them master foreign technologies. From the latter half of the thirties the Soviet Union began to invite fewer specialists from abroad since there were enough personnel trained at home to meet the needs of the country's economy.

Thus, the Soviet Union became technologically independent and avoided having to pay huge sums for foreign "technical aid".

Without Giving Up One's Job

There were people who could not give up their jobs in order to study. Many had families and had to earn a living since student allowances and other grants were not enough. Many had passed the student age. Factories and plants, on their part, could not function properly if all those who wished to study were to leave their jobs. And there were fewer places at institutions of higher education than the number of people who wished to enrol.

The Soviet government did its utmost to avoid discrimination of any kind in the field of education and to create equal conditions for those who studied full time and for those who wished to continue their studies while holding a job. Besides, the country needed more skilled personnel than the educational establishments for full-time students could provide. It was also essential to raise the educational and technical level of all those who had worked for a long time and who had not obtained an adequate education before the revolution.

To solve these problems, the Soviet state set up a system of training skilled personnel that combined work with studies.

Young workers especially were urged to study without discontinuing their employment. In 1918 compulsory education was introduced for all adolescents aged 15 to 17 no matter where they worked, at private state-owned factories and plants, handicraft shops, trade or other organizations. For two years the young people studied after working hours at special evening schools. Then young workers were offered an opportunity to get vocational training. In mid-1920 a system for improving the technical skill of working adults was established. Compulsory vocational training was introduced for all workers aged 18 to 40 who did not have a schooling equivalent to that provided by pre-revolutionary trade schools.

Apart from evening schools, diverse forms and means were used to provide vocational education for those who combined work with studies. Courses in different subjects were opened, popular science lectures were delivered, technicians' groups were set up at workers' clubs, special radio programmes were broadcast, technical books and magazines were published, and educational films were shown.

Workers' faculties attached to higher education establishments had two departments: a main department for those who studied full time and an evening department for those who combined work with studies. Students enrolled in the evening department attended classes five days a week for three hours every day. To make things easier, various privileges were provided for the students directly at their place of work. For example, their working day was shortened without reduction in wages, and they were given time off to prepare for exams.

Initially, the study-and-work scheme was intended for those who did not have sufficient schooling or technical training to be able to work or enrol in higher education establishments. But as the general educational and technical level began to rise, many workers needed to continue further studies. Special evening and correspondence schools were opened, and evening and correspondence departments were set up at universities and institutes.

In a new undertaking such as this, some mistakes and failures were perhaps unavoidable. In some instances, schools were set up as training shops attached to plants, mines and collective farms. The level of education at such schools was naturally lower. But as the Soviet government and the trade unions devoted much attention to the matter of training specialists, all mistakes and setbacks were gradually overcome. Regular checks and inquiries into the work of educational establishments were carried out by state and public organizations, which helped to improve their work. Much importance was also attached to exchange of experience and the dissemination of the most advanced methods and forms of instruction.

Gradually the system of training specialists that combined work with studies was unified and centralized. Among other measures, general standards were set, uniform curricula were worked out, and terms of instruction and forms of checking school progress were specified. As a result, the quality of training markedly improved.

The experience gained in this field has also proved highly valuable. Today many people in the Soviet Union combine studies with work, but at a

higher level, especially since the introduction of universal compulsory ten-year secondary education in 1975.

The system of training specialists by combining work with studies emerged in the first post-revolutionary years. This system has played a significant role in providing skilled personnel for the country's economy.

There is another side of the matter which deserves mention. Until 1930 there still existed in the USSR a state of affairs which is found in many developing countries today: a shortage of skilled personnel along with unemployment. The problem could be solved by training the unemployed in fields where the shortage of labour was most acute. In the Soviet Union the necessary conditions for this had been created. Since education was free, the unemployed had equal opportunities with all others to improve their general educational and technical level. The knowledge and skills they acquired helped them find jobs. In 1930 the country's last labour exchange was closed down. Unemployment was done away with.

The experience of socialist construction in the early years of Soviet government showed that the training of skilled personnel is an organic part of the general process of economic development and technological reconstruction. The principle of combining work with studies was particularly significant when the foundations of modern industry were just being laid and many of those who would be working at the new industrial enterprises were also those who built them.

Today a differentiated approach is adopted to the training of skilled personnel. For example,

construction workers are trained so that they would continue to work in the construction industry and improve their qualifications in their chosen speciality. That is why in the initial period of training the future specialist studies full time at a specialized education establishment and undergoes intensive practical training. Afterwards, when he is already working, he can improve his skills without discontinuing his employment.

The situation was different when industrialization first got under way. As said earlier, the first workers and specialists of a new enterprise were often those who built the enterprise. It was more in line with the conditions of those days to follow the principle of obtaining an education without discontinuing one's employment. Eager to receive an education, young builders who had had no previous schooling studied at general education schools in the evening after work, mastering building skills while at the same time learning new trades which the plant would need in the future. In most cases, the builders became first-rate specialists because they had a feeling of being masters of their plant responsible for its future.

Of course some builders did not change their occupation. After building one enterprise they would move on to another construction site. They combined their work with studies, gradually becoming experts at their job and also learning new building trades as the technological level of the whole building industry went up. Many of those who worked with a spade and wheeled concrete in a barrow in their youth would later operate complicated machinery or, after completing their studies(without giving up their jobs) at general

education and specialized secondary schools and correspondence institutes, became engineers and heads of construction projects.

Particular emphasis was laid on the training of skilled personnel that combined work with studies at a time when there was a shortage of labour and it was difficult to let workers and specialists leave their jobs in order to study. Various forms of training specialists were used in combination. Many future specialists received their training under both systems: at first they only studied, then combined their studies with work.

The level of education of those who combined work with studies was also rising. Initially, they were taught relatively simple trades, and it was evening workers' faculties that provided a higher level of training. But as the quality of compulsory universal education improved, those who did not discontinue their employment began to be trained in more sophisticated trades at evening and correspondence specialized secondary schools and institutions of higher education, and even correspondence post-graduate courses which prepared students for defending their candidate's or doctor's theses.

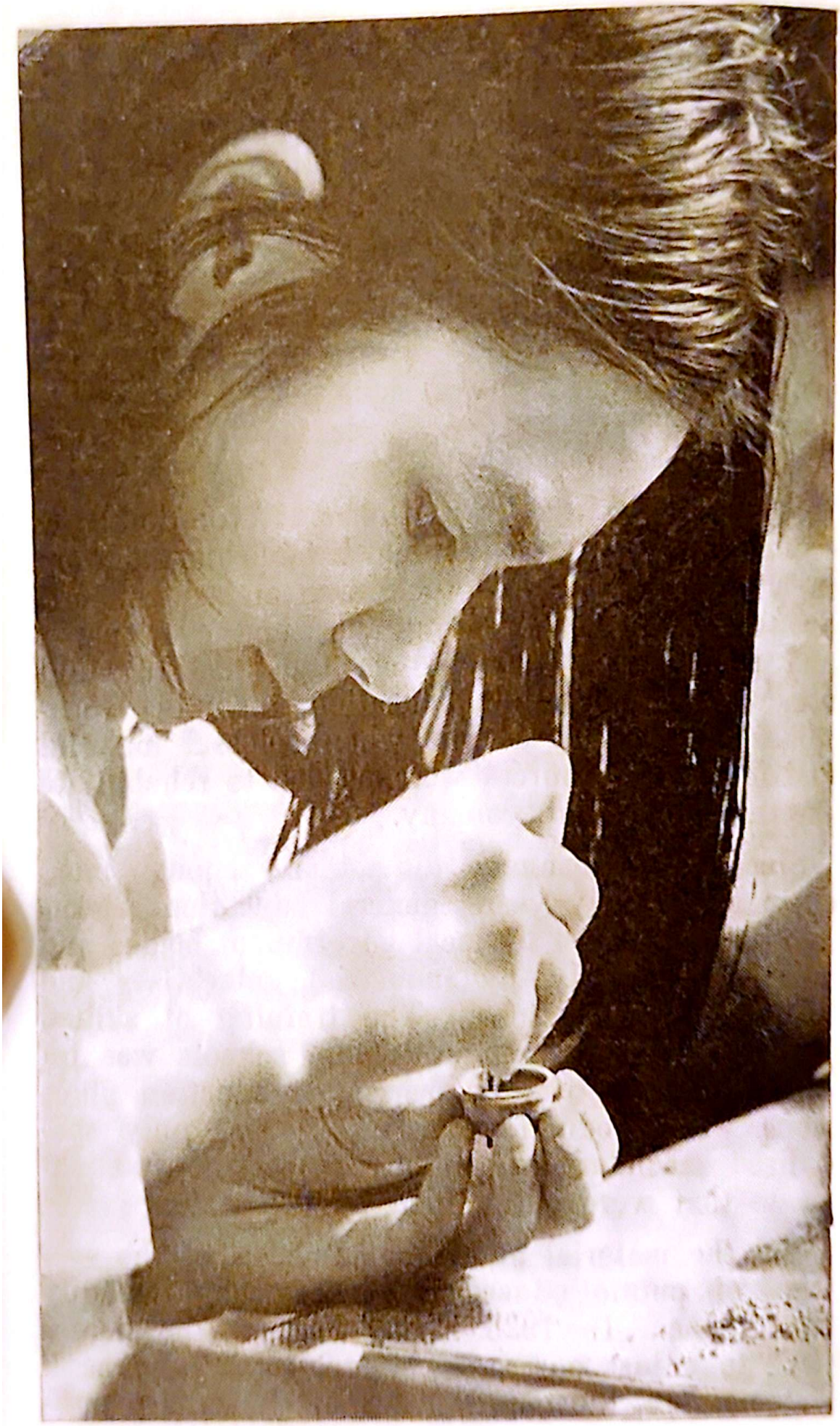
How the New School System Was Organized and Financed

Material Base

After the October Revolution the premises of many educational establishments were in a parlous state and there was an acute shortage of textbooks, teaching aids, and even paper and pencils. The Soviet state thus had to build a new system of public education, including vocational training, at a time when colossal material and financial resources were needed to rehabilitate the ruined national economy.

Since the government did not have enough money in those early years, general education schools had to be financed by local government bodies and vocational schools—by industrial enterprises and economic organizations. The training of skilled workers at factory apprenticeship schools was included in industrial enterprises' production plans along with production targets. It was only specialized secondary and higher education establishments that were maintained by the state.

But the material and financial basis of the system of public education was being steadily strengthened. In 1923 Lenin stressed the necessity "to adjust our state budget to satisfy, as a first measure, the requirements of elementary pub-



Practical training centres have been set up for senior pupils in many cities and towns of the Soviet Union, where young people can acquire various work skills. This helps them to choose their future trade or profession

lic education".[1] From that time on state allocations for public education began to increase substantially. To ensure more efficient use of material and manpower resources in public education, many schools were integrated and classes were often conducted in two shifts. Thus, in 1924 there were 14 per cent fewer schools in the country than before the revolution, while the total number of pupils increased considerably.

The material basis of educational establishments was strengthened at minimum cost. Students and teachers repaired and re-equipped old school buildings and helped to build new ones, thus learning to work collectively. Students made not only furniture for their classrooms but also various teaching aids. Those young people showed a caring attitude to their school buildings, equipment and textbooks.

The movement for public support of general and vocational education initiated by the Soviet government developed on a broad scale. In towns and the countryside people of all ages voluntarily collected firewood, money, books and writing materials for schools.

In addition to their regular work many specialists taught young people on a voluntary basis. They supervised technical hobby groups and helped workers who sought to improve their skills or apply new technologies in production.

Schools also received substantial material aid from their patrons—industrial enterprises and collective farms. Thus, workers and employees of an enterprise or a farm helped the school it patronized

[1] V. Lenin, *Coll. Works*, Vol. 33, p. 463.

by taking part (on a voluntary basis) in building new school premises or repairing old ones; tools and machinery withdrawn from production process were given to the school. The schools, in turn, helped their patrons: teachers encouraged workers to raise their educational level. Many students had their practical training at the patron-enterprise and often received employment there upon finishing their studies.

This patronage system, which emerged in the first years of Soviet government, proved to be a vital form of socialist social relations. It forged closer links between the training of specialists and the development of the national economy and public life. For this reason the system has been preserved to this day although today it no longer depends on this source of material and financial aid.

Principles of Administration

The Soviet state set up special bodies to administer the system of public education and the training of specialists. Their work is based on the principle of democratic centralism, which means combining instruction in accordance with uniform curricula with maximum encouragement of local initiative.

Public education was supervised by the People's Commissariat (Ministry) for Education. Universities and institutes came under the Committee dealing with affairs of higher education establishments, which had the authority of a ministry. Vocational education was also supervised by state

bodies, with local authorities playing an important role in the day-to-day administration. Central and local Party organizations directed the work of the entire system of personnel training in accordance with the general principles of socialism and the specific tasks of the day and also conducted ideological and educational work among workers and members of teaching staffs.

Methodological work, in particular, the elaboration of curricula and the compiling of textbooks, was directed by the pedagogical section of the State Academic Council.

The Komsomol took an active part in the organization and day-to-day administration of the system of personnel training. It was on Komsomol initiative that in the early twenties the first factory apprenticeship schools were opened, which laid the foundation of vocational education. Today graduates of vocational schools are highly-skilled workers with a complete secondary education.

In line with changes in the organizational structure of the country's economy, the system of personnel training, which at one time, just as general education, was supervised by the People's Commissariat for Education, was placed under the industrial ministries. For example, responsibility for schools that trained specialists for the iron-and-steel and other branches of heavy industry was vested in the People's Commissariat of Heavy Industry. In the mid-thirties vocational education came within the jurisdiction of the State Board for Educational Establishments. However, the basic principle of state supervision of personnel training remained unchanged.

Training of Specialists

It takes time to train a specialist. But in the early years of Soviet government specialists were needed everywhere and immediately. That was one of the crucial problems facing the country. In the late twenties there was still an acute shortage of skilled personnel. In 1927, for example, more than 31,000 workers with a specialized secondary education were needed by large industrial enterprises of the state sector, but the country's schools providing such training graduated only 5,305 that year. In the late twenties there were three or four engineers per 1,000 workers in the Soviet chemical industry as against 34 in Germany.

In 1920, or two years after they had been opened, workers' faculties turned out their first graduates, a mere 215 people, which was far below the number the country needed. But that was only a beginning. In 1921 already 2,000 were graduated, of whom more than half entered technical institutes and many enrolled in medical institutes and universities.

To encourage young people to get a higher education it was necessary to provide material assistance to those who wished to study. It should be remembered that in those years the country's economy was still very weak. Nonetheless, state scholarships were granted to all those studying at specialized secondary schools, workers' faculties and institutes. Students were also provided with hostel accommodation and good meals at reduced prices and enjoyed other privileges. A special system of medical service was set up for them. Al-

locations for these purposes were approximately equal to the scholarship fund.

By the end of the rehabilitation period about 50 per cent of all students at institutes and universities were graduates of workers' faculties. In addition to the knowledge they acquired they had gained practical experience in production work; they had a serious attitude to work, ideological awareness and sound moral principles.

Members of both the old and new intelligentsia taught in schools, institutes and universities. Since there was a shortage of teachers, many who had regular employment in schools, industrial enterprises, scientific institutions and governmental organizations, conducted classes for young people in the evening. The main requirement here was that they had had adequate training and were not engaged in hostile activities against Soviet power.

The enemies of socialism resorted to various means of undermining socialist construction. They provoked conflicts between teaching staff and governmental bodies, spread counter-revolutionary ideas among students, and tried to disrupt classes and lectures. Therefore, in order to teach at workers' faculties and other schools that trained specialists for the national economy, one must have the approval of the trade union of educational workers.

Gradually the number of teachers increased and their qualifications improved.

The Soviet Union was the first country in the world to set up a system of training personnel along socialist lines. Not everything that was done proved effective. There were obvious mistakes. For example, for several years a laboratory-team meth-

Experienced teachers help young workers to improve their qualifications

An exhibition of articles made by students of a vocational art school

od of instruction was practised whereby students or pupils were divided into groups, each given an assignment to be fulfilled jointly. In the course of their work the group consulted their teachers, and upon completion of their assignment one of them would report the results to the teacher on behalf of the whole group. This method enabled one teacher to work with more students and to cover the curricula within shorter terms. It was also thought that this method would help to develop a spirit of collectivism in students. However, in practice, it made it more difficult to check the work of students and to give each the attention he needed. As a result the quality of training suffered. Therefore, the laboratory-team method of instruction was abandoned.

Particular attention was devoted to education of women. Before the revolution it was difficult and even impossible for the majority of women to obtain an education though many women worked. As a rule, women received less pay for doing the same work as men. The revolution gave men and women equal rights in all fields, including education. However, held back by old traditions, habits and ignorance, few women took advantage of their right to education immediately after the revolution. The number of women enrolled in the first workers' faculties did not exceed 20 per cent of the total.

The Soviet government took special measures to encourage women to study. For example, at big enterprises where mostly women were employed, courses were set up to prepare not only women for entry into workers' faculties but also their daughters. Places were reserved for girls at work-

ers' faculties, specialized secondary schools and institutes and universities. Local Party organizations and trade unions were responsible for promoting education of women. Schools for women, courses and teachers' colleges were set up throughout the country.

Already in 1930 women accounted for 50 per cent of all students at preparatory courses and workers' faculties in some regions of the country. In 1941 women made up 58 per cent of the country's student body.

Abolishing National Discrimination

As a multinational state the Soviet Union provides a good example of how national discrimination can be successfully overcome. It was particularly important to do away with national inequality in the field of personnel training in order to promote the economic, social and cultural development of the outlying regions of the former Russian Empire. In view of the extreme backwardness of these regions in the field of education, special measures were taken by the Soviet government.

In the Soviet eastern republics, the education of young people proceeded along two lines. First, many of them were sent to study in Moscow, Leningrad and other big cultural and industrial centres. They were given special academic privileges, and places were reserved for them at workers' faculties and other educational establishments. In addition, special schools were set up for them. Thus, a workers' faculty with a four-year course

was opened in Leningrad for young people from Soviet Central Asia and Transcaucasia. Second, schools were opened in the national republics themselves.

...It was 1920. A train was moving slowly through the vast expanses of the war-ravaged country. It often stopped on the way: the railway was destroyed or the region was occupied by enemy troops. The train was carrying teachers to Tashkent where the first university in Soviet Central Asia had been built on Lenin's initiative. It brought 86 professors and teachers from Moscow and Petrograd (now Leningrad) as well as 65 carriages of laboratory equipment, textbooks and books collected throughout the country—a total of 20,000 volumes.

That was how the development of higher education began in Soviet Central Asia. Later, on the basis of Turkestan State University, many institutes and research centres were set up. At present there are about 31,000 scientific workers in 30 research institutes affiliated to the Uzbek Academy of Sciences. About 250,000 students are enrolled in the republic's 43 institutions of higher education. Almost 200 specialized secondary schools train middle-level specialists.

The national republics basically used the same forms and methods of training personnel as the country's old industrial and cultural centres. Specialized secondary schools, workers' faculties, schools and courses at industrial enterprises were opened in regions where the inhabitants were mostly illiterate before the Revolution. University centres in other parts of the country gave material assistance and also sent teachers there. Instruc-

tion was in the native languages, but the curricula included the study of Russian, a knowledge of which enabled future specialists to read scientific publications in Russian and to work with their colleagues of other nationalities of the USSR.

Past and Future

More than 60 years have passed since the world's first socialist state searched for ways of accelerated economic development. The generation of the young workers and peasants for whom the Soviet state made it possible to receive an education have ended their working lives. But it is their creative work that has laid the foundation for the country's present highly-developed economy, science and culture. The historical experience of the twenties and thirties is still valuable today, and it will play a significant role in future, too.

The present system of personnel training in the USSR is fully in keeping with the demands of the scientific and technological revolution and the tasks of building a communist society.

Complete democracy remains the underlying principle of the Soviet educational system; Soviet citizens have equal opportunities to acquire a profession of their choice. Article 45 of the Soviet Constitution not only proclaims the right to education and makes secondary education compulsory for all, but also provides for measures to ensure the exercise of this right. Thus, all education in the country is free, from primary to higher

education and post-graduate studies; there are many different forms and levels of vocational training, and specialized secondary schools and institutes and universities offer courses in a wide range of subjects; state grants are provided and various privileges are established for students, making education accessible for all who wish to study, regardless of their parents' financial status.

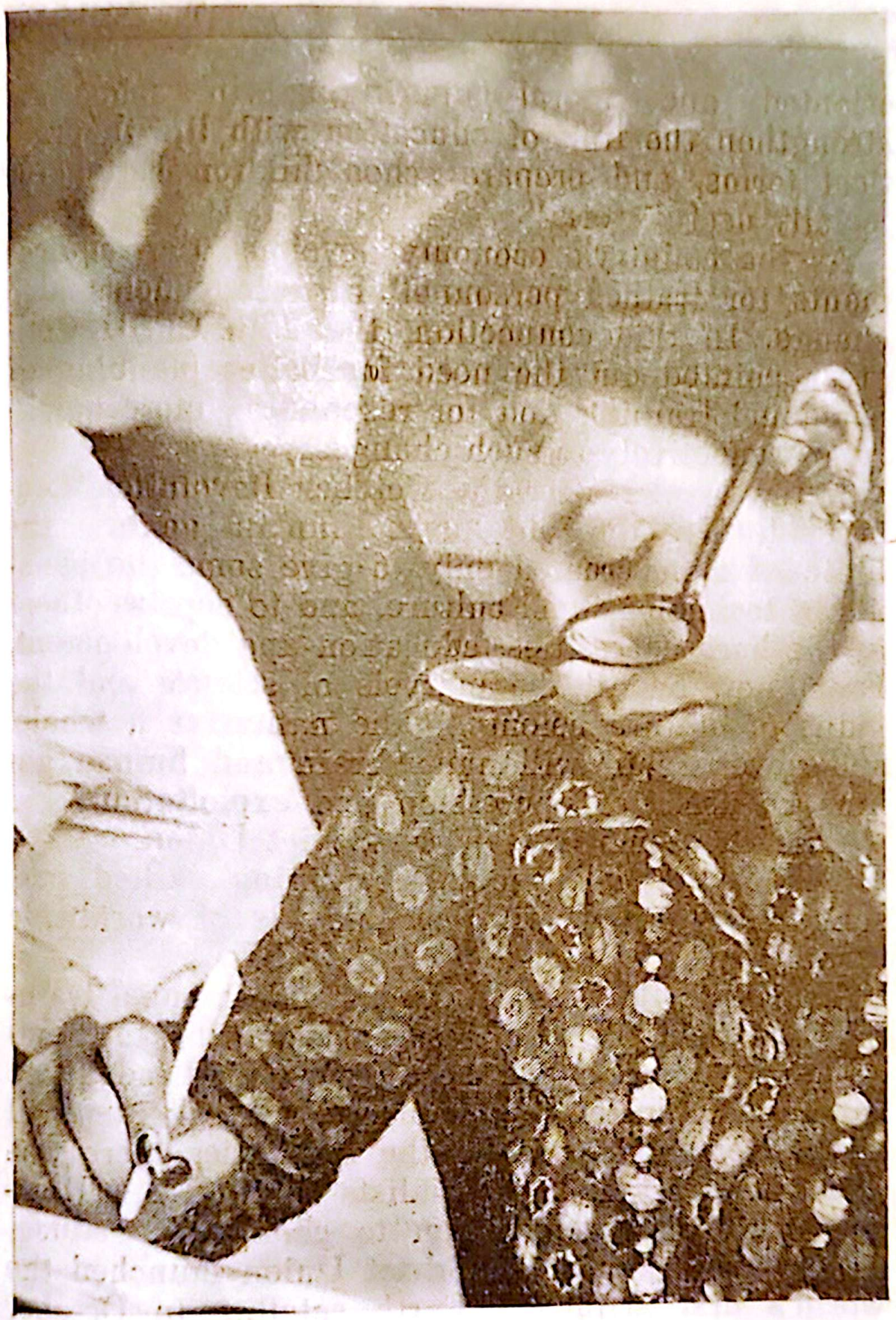
The ramified system of correspondence and evening schools enables Soviet people to improve their qualifications without giving up their job. They work on shifts which do not interfere with their classes. They are given an additional and partially paid leave to prepare for examinations. Instructors of specialized secondary and higher education establishments travel to towns and regions where there are many correspondence course students to deliver lectures and hold consultation sessions. Students are entitled to reduced fares on all types of transport when they need to go to other cities and towns to take their examinations.

Graduates of all types of educational establishments are guaranteed a job in their chosen trade or profession and have opportunities to improve their qualifications.

For those who wish to study on their own, various textbooks and reference books are published and consultations and lectures are arranged.

A programme for improving the system of education and personnel training was worked out by the 26th CPSU Congress in 1981. While noting that a significant stage had been reached with the introduction of compulsory secondary education, Leonid Brezhnev said: "Today the main thing is to improve the quality of instruction and of work-

The buildings of Moscow University named after M. V. Lomonosov, the country's biggest university



In a lecture hall of Tashkent State University

oriented and moral upbringing in schools... strengthen the link of education with life in practical terms, and prepare schoolchildren better for socially useful work."

As the country's economy develops, the requirements for trained personnel in various fields also change. In this connection, the 26th CPSU Congress pointed out the need for better planning of personnel training and for responding more quickly and effectively to such changes.

A few weeks after the October Revolution Lenin said: "In the old days, human genius, the brain of man, created only to give some the benefits of technology and culture, and to deprive others of the bare necessities, education and development. From now on all the marvels of science and the gains of culture belong to the nation as a whole, and never again will man's brain and human genius be used for oppression and exploitation." [1]

This has come true in the Soviet Union.

The Soviet experience in training skilled personnel for the national economy is of worldwide significance.

Thanks to its effective system of personnel training, the Soviet Union has moved to the forefront of world science and technology, and advanced capitalist countries are compelled to take note of the Soviet experience. In the mid-fifties there was an acute shortage of specialists in the USA. However, no steps were taken to change the educational system until the Soviet Union launched the world's first artificial Earth satellite in October 1957. The event, which clearly demonstrated So-

[1] V. Lenin, *Coll. Works*, Vol. 26, pp. 481-482.

viet scientific and technological expertise, was regarded in the USA as evidence of the superiority of the Soviet system of scientific education. Shortly before being elected President of the United States, John Kennedy noted that the share of the national income the Soviet Union was spending on education was two and a half times more compared to that in the United States, that Soviet schools were turning out fifteen times as many pupils with a good basic knowledge of arithmetics, algebra, geometry, astronomy and trigonometry, and Soviet institutes were graduating two and a half times as many engineers. The USA, he said, was in a crisis situation, and there was no more important task facing American science than to expand and improve the opportunities of education. US leaders made extensive use of the Soviet experience in restructuring their system of personnel training.

But personnel training is an integral part of the socio-economic structure of a society. Therefore the Soviet experience is being applied fully and most effectively in socialist countries, with account taken of national peculiarities and specific conditions, tasks and traditions. Co-operation between socialist countries in this field helps improve the quality of training.

The Soviet Union helps many developing countries in Asia, Africa and Latin America in setting up their national system of vocational training.

This assistance is rendered in three main directions:

1. Training of specialists in various fields and of various levels (from skilled workers and technicians to engineers and scientists) in the USSR.

The Soviet Union renders all-round assistance to young independent states and helps them to train national personnel
Mali. Soviet scientist L. Kulikov with students in a laboratory

India. The heavy engineering plant in Ranchi has been built with Soviet assistance

Tunisia. L. Lukushev from the Soviet Union with one of his students at the National Engineering School

2. Building of educational establishments in developing countries and sending of trained teachers to work there.

3. Training of specialists in the course of building industrial, agricultural, scientific and cultural projects with Soviet participation as part of aid rendered by the Soviet Union to the developing countries.

The experience of personnel training gained by the Soviet Union in the twenties and thirties is creatively applied in the developing countries, with due account taken of up-to-date achievements in science and technology and the specific conditions and needs of each state.

In the early eighties the Soviet Union had rendered such assistance to 63 developing countries on the basis of intergovernmental agreements. It has helped build 143 educational establishments in 26 newly-free states. As a rule, training centres are set up at industrial enterprises built with Soviet assistance. In this way the Soviet Union has helped train more than 850,000 people in various trades and professions in developing countries. They include engineers, technicians, skilled workers, doctors, teachers, scientists, and so on. Soviet specialists are working in many developing countries. While carrying out their assignments they also pass on their knowledge and experience to those who work with them, thus helping to train specialists in those countries.

A big dam is now being built on the river Da in the Socialist Republic of Viet-Nam. It is part of a giant hydropower station with a rated capacity of 2,000,000 kw. At the construction site one can see 27-ton dump trucks, bulldozers, and high-

ly-efficient mining machines. The chief adviser for the project is a Soviet engineer, Pavel Bogachenko. Another Soviet engineer, Gennadi Kokluntsev, is helping to build a tunnel with a diameter of 12 metres. Working with him is Vuong Van Truen, leader of a team of tunnel drivers. There is no language barrier between the two, for Vuong Van Truen studied at a mining school in Krivoi Rog in the Ukraine. Most of the young workers in his team received training while taking part in the building of big Soviet hydropower projects. Another 30 Vietnamese workers have recently returned from the Tajik town of Nurek where they were taught to operate complex building machinery. Forty young workers have been sent to the Soviet Union to learn trades which are not yet taught in Viet-Nam. Many more Vietnamese are receiving on-the-job training while working on a hydropower project now being built in Hoabinh with Soviet assistance.

The Socialist Republic of Viet-Nam has drawn on Soviet experience in eradicating illiteracy. Children of workers, peasants, and craftsmen of all nationalities inhabiting Viet-Nam now have access to education, which is free. Students receive state allowances. Evening and correspondence schools and vocational schools have been opened. Technical schools and training centres have been set up at big industrial and agricultural enterprises. This enables workers to learn new trades without giving up their jobs and also establishes closer links between studies and practice. Many technical schools, from vocational schools to the Hanoi Polytechnical Institute, have been designed by Soviet specialists and equipped with Soviet

machinery and instruments. Soviet teachers are on the staff in many of them.

Many young Vietnamese are studying in vocational schools, institutes and universities in the USSR, and young workers from Viet-Nam's biggest industrial enterprises and construction projects are receiving training at Soviet factories and plants.

Western capitalist states also help train personnel for developing countries. However, they use their assistance as a means of bringing pressure to bear on these countries and making the latter's economies dependent on their own. The Soviet policy in this field is basically different from that of Western states.

Soviet foreign policy is based on Leninist principles: the right of nations to self-determination; the sovereignty and full equality of all states; non-interference in the internal affairs of other countries; the right of every nation to choose its economic, social and political systems; the inalienable right of every state to use its own natural and economic resources; renunciation of any privileges and discriminatory measures and of the use of force in relations between states; and the development of mutually advantageous co-operation between states in the interests of economic and cultural progress. These principles form the basis of Soviet co-operation with developing countries in personnel training.

The principle of democracy is inherent in the Soviet educational system. Thus, thanks to Soviet assistance in personnel training, young people from families of workers, peasants and members of the working intelligentsia in developing countries

are able to receive an education and acquire a profession.

During their stay in the Soviet Union students and trainees from Asian, African and Latin American countries feel a spirit of genuine internationalism on the part of Soviet people, their sincere desire to help promote the economic and social progress of peoples who had earlier been subjected to ruthless exploitation by the forces of imperialism and colonialism.

In the south-western part of Moscow there is a whole township with modern buildings. These are the premises of the Patrice Lumumba People's Friendship University founded in 1960 specially for young people from Asia, Africa and Latin America. The university is named after Patrice Lumumba, a fighter for national liberation in Africa, and the first Prime Minister of independent Congo (now Zaire), who was murdered by enemies of the path of social progress and independent development taken by his country.

At Friendship University young people from various countries attend lectures and seminars, conduct experiments and have lively debates. They are studying to be doctors and engineers, agronomists and mathematicians, economists and lawyers. They also receive practical training at the country's advanced industrial enterprises, mines, collective and state farms, research institutes and hospitals, most of them situated in the country's southern regions where climatic conditions are similar to those in many developing countries. Sometimes students do their pre-graduation practical training in their own countries before defending their diploma project at the University. There

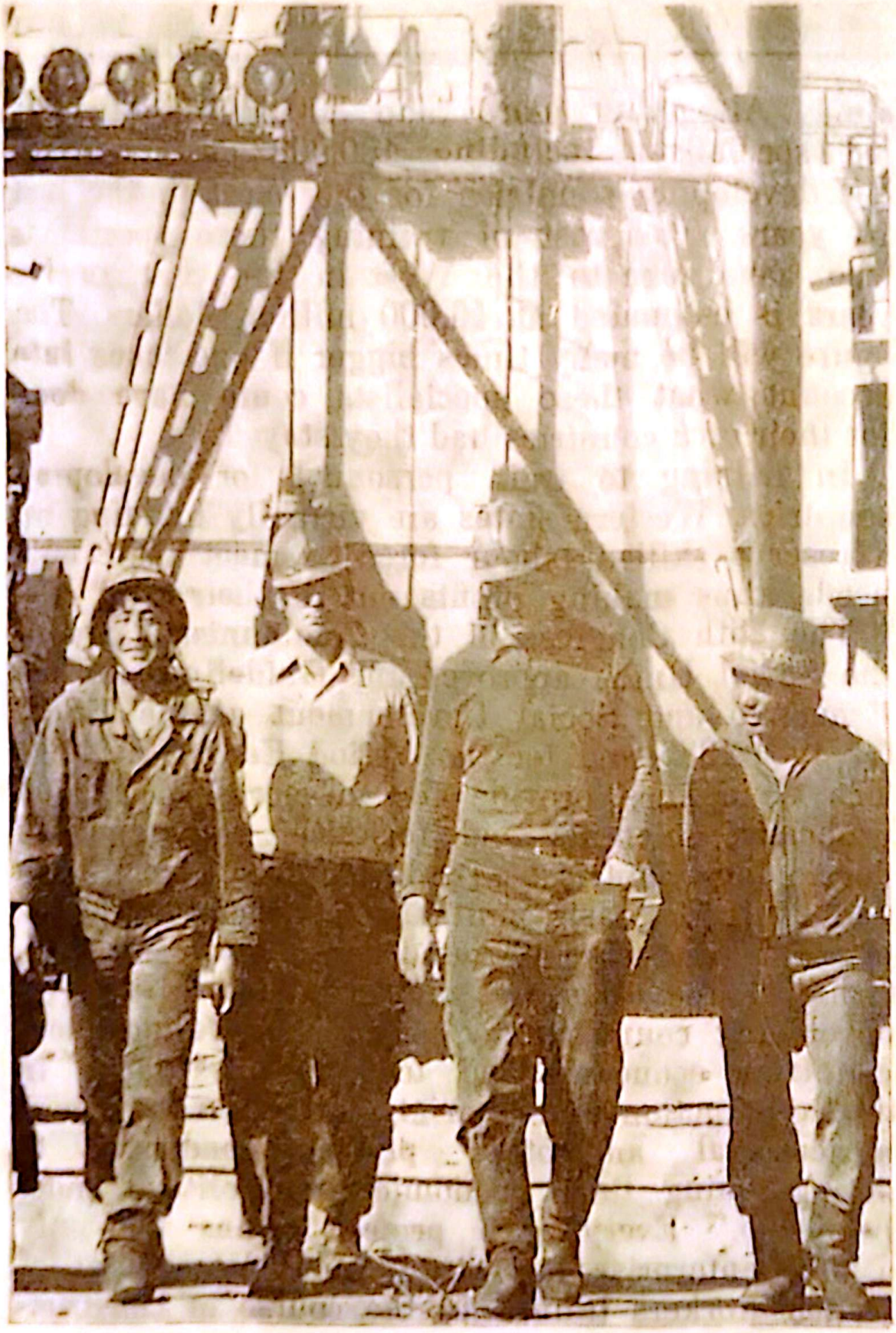
In 1960 the Patrice Lumumba People's Friendship University was opened in Moscow. In the early 1980's about 7,000 students, mainly from developing countries, were enrolled there

were nearly 7,000 students and post-graduates at the Friendship University in the early 1980's.

In training skilled personnel for developing countries, the Soviet Union considers the real needs of their economies. Therefore, specialists trained with Soviet assistance have a good knowledge of the requirements of production, which makes them particularly valuable when they return to their own countries. Usually they work in key economic sectors, often in state enterprises and organizations, in the spheres of social welfare, education and public health. This is what distinguishes them from Western-educated specialists who are trained primarily to work for private companies operating in developing states. This trend is fraught with negative consequences for young states since it can only lead to a widening of the technological gap between foreign enterprises and the less developed national industry, making the latter still more dependent on the West.

In the Soviet educational system a high level of professional training is combined with fostering in the students social and political awareness. This tradition dates back to the first years of Soviet government and has stood the test of time. It is not surprising, therefore, that engineers and technicians from developing countries trained with Soviet assistance are not only highly-skilled specialists but also champions of social progress in their own countries.

The so-called "brain drain" has done incalculable harm to developing countries which so badly need trained personnel in all fields. In the past ten years more than 150,000 doctors, scientists and engineers have emigrated to the United States



Mongolia. The Soviet-Mongolian crew of a walking excavator in a coal pit

alone. Altogether more than 300,000 highly-skilled specialists, including 180,000 doctors, have left developing countries for the West in the last 15 years. The cost of training those specialists who have gone to the West in the past twelve years is estimated at 46,000 million dollars. The figure will be many times bigger if one takes into account what these specialists could have done for their own countries had they stayed.

In helping to train personnel for developing countries, Western states are virtually building up a reserve skilled labour force to meet their own needs, thus making profits out of their "aid".

The 26th Congress of the Communist Party of the Soviet Union approved the Guidelines for the Economic and Social Development of the USSR for 1981-1985 and for the Period Ending in 1990. The Guidelines provide for measures to expand economic, scientific and technical contacts with developing countries: "To develop, on a long-term and equitable basis, mutually beneficial exchange of goods and the all-round economic, scientific, technical and other ties of the Soviet Union with developing countries, to continue rendering these countries economic and technical assistance in the construction of industrial enterprises and power, agricultural and other projects conducive to strengthening their economic and political independence." Every such project means not only a new enterprise but also a new detachment of skilled workers trained in the course of construction.

Peace and détente are the necessary conditions for the further development of co-operation among states. Therefore, the anti-war movement is also

becoming a movement for economic and social progress, for the cultural flourishing of every nation. The training of skilled personnel for the national economy is an essential part of this movement.

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Mai VOLKOV (b. 1927), D. Sc. (Economics), Professor of political economy, is a researcher at the Institute of World Economy and International Relations of the USSR Academy of Sciences. From 1966 to 1971 he worked at the United Nations Industrial Development Organization (UNIDO). He has participated in the work of many international economic conferences and symposia and is the author of some 200 works on problems of economic development.

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